Neoplastic Transformation in Differentiated Epithelial Cell Systems In Vitro

Edited by L. M. Franks and C. B. Wigley
Academic Press; London, New York, 1979
xii + 314 pages. $33.50

The use of in vitro model systems to study biological phenomena represents a major advance: such phenomena can now be studied at the cellular level under controlled conditions and with fewer variables (such as immunological reactions and hormonal influences). With in vitro model systems for chemical carcinogenesis there is the additional advantage of a relatively high yield of transformed cells by contrast with the low yield in vivo. Accordingly, most of the new insights into the mechanisms of action and the molecular biology of spontaneous and virus-induced transformation have been derived from the application of in vitro techniques. Therefore, various cell culture assays for the study of chemical carcinogenesis have also been developed and are being used today routinely, at least in part. Since all these assays, however, employ fibroblastic cells and since, on the other hand, the great majority of human tumors develop from cells of epithelial origin, there is today a great need for the development of transformation assays with epithelial cells.

This monograph offers the first review of technical problems associated with the culture of epithelial cells and of epithelial transformation systems now in use. In addition to extensive literature reviews the various chapters contain a great deal of original previously unpublished information and ideas on future developments in this area. In particular, the investigation of cellular differentiation processes during transformation, which seems feasible in such epithelial cell systems, opens new and intriguing research possibilities. Individual chapters are concerned with discussions of markers for transformation (I. B. Weinstein et al., J. K. Cowell, C. M. Franks), carcinogen metabolism in vitro (J. E. Gielen et al.), and reviews of transformation systems with epithelial cells from the salivary gland (C. B. Wigley), skin (N. Fusenig et al., K. Indo and H. Miyaji, and N. Colburn), bladder (I. C. Summerhayes), respiratory tract (L. M. Franks and C. B. Wigley), liver (T. Kuroki et al.) and brain (O. D. Laerum et al.). Each chapter is accompanied by extensive literature citations.

This monograph represents the proceedings of a workshop held at the Imperial Cancer Research Fund in London in June 1978, and necessarily, in a rapidly developing area such as this, more important information has been accumulated in the meantime (such as the study of markers for the neoplastic transformation of liver cells by G. M. Williams and his coworkers in Cancer Research 39 (1979) 1029 and 4441). Nevertheless, however, this stimulating monograph provides extensive reviews and new information and will, undoubtedly, make fascinating reading to cell and molecular biologists in general and cancer researchers in particular.

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Molecular Basis of Environmental Toxicity

Edited by R. S. Bhatnagar
Ann Arbor Science; Michigan, 1980
x + 590 pages. £22.00

The chapters in this book are largely based on the papers presented at a Symposium on the Molecular Basis of Environmental Toxicity held as part of the 176th National Meeting of the American Chemical